

E. L. CAMBRIDGE
CHRONOLOGICAL
1981



Date: December 29, 1981

Subject: Primary Processes R & D - Tucson
Monthly Report - December

From/Location: E. L. Cambridge/Tucson

To/Location: J. G. Kaufman/Louisville

BASIC RESOURCES RESEARCH

General

Routine equipment necessary for the effective operation of the lab was ordered and delivered. A batch type rotary kiln has been set up and a scrubbing system for vent gas treatment has been constructed.

Anaconda Clay Process

The sample of ACH from a single crystallization was received from USBM. A fractional factorial design for the first campaign of impurity leach experiments was prepared. Leach tests are almost complete and all resulting samples will be submitted for analysis this week. The first campaign will determine the importance of the independent variables affecting leaching. A second campaign is planned focusing on the variables subsequently identified as most important.

AD-105 Process

A brief, non-proprietary talk was given by Tom Bolles to the Science Advisory Council during their recent visit to Tucson.

AlCl₃ Process

A statistically designed experimental program to replace CO as a reductant with petroleum coke in chlorination of aluminum chloride hexahydrate was prepared and initiated.

Two invention records relating to unique modifications to the combined Anaconda/CSIRO/ASP process were prepared and forwarded to Stan Becker.

REDUCTION RESEARCH

AD-108 Process

Several batches of prebake composite anodes were made. A series of experiments were successfully carried out to provide base line information and familiarize staff with the process.

AD-108 Process (Continued)

Preparation of composite anodes in prebaked form using (1) partially calcined anthracite/alumina, (2) green coke/alumina and (3) green coke and partially calcined anthracite/alumina was initiated.

A reference electrode set-up for composite anode studies was designed.

A powdered composite anode (carbon coated alumina particles) was prepared and several experimental electrolysis runs were carried out.

Five invention records relating to the composite anode process were prepared and forward to Stan Becker.

LiF/Modified Electrolytes

Plans for the LiF work at Tucson to support plant experimentations were finalized.

In a preliminary test, partially calcined aluminum chloride hexahydrate was solubilized sufficiently in a modified low-temperature electrolyte to support an electrolysis run with a graphite anode at 4 amps/in² current density. Analytical results for solubility are not yet available.

Potlining Disposal/Reclamation

At a meeting with Alcan in Montreal on December 8, it was agreed to proceed with a cooperative study to determine the feasibility of a joint development program in this area. A mutual secrecy agreement was exchanged. Alcan representatives will visit Tucson January 12 and 13 as a next step. Minutes of the meeting will be issued this week under separate cover.

Petroleum Pitch

We have been informed by Harvey Technical Center that Products' needle coke pilot plant project has been cancelled. We will try to obtain a sample of pitch from pervious work for evaluation. Analytical results from previous pilot plant runs in Japan indicated a highly variable quality with the best results similar to Ashland 240. Evaluation work for Ashland pitch is continuing at Columbia Falls.

DEVELOPMENT & TECHNICAL SERVICES

New X-ray Method for Bath Ratio

Testing for this project is virtually complete. Columbia Falls lab staff have done the majority of the work. Schneller's preliminary interpretation of results indicates that the proposed method is superior to existing techniques. A final report is scheduled for January.

Coke & Pitch Quality

In response to W. A. Hoffman's request, we have quantified the economic consequences of increased vanadium and sulfur in coke and QI in coal-tar pitch for a prebake operation. We intend to extend, amplify and refine this information as further data becomes available.

Mitsubishi Technology - Columbia Falls

I visited Mitsubishi Light Metals Company, Naoetsu Plant with the Columbia Falls team to assess Mitsubishi's proposal for the sale of technology. This evaluation is continuing.

PERSONNEL

An advertisement for 2 positions in Reduction was placed in the January issue of Journal of Metals.

Local interviews for three technicians' positions are in progress.

OTHER

The AFE for our Carbon & Reduction Research Facility was submitted to Louisville on December 9. A potential bidder's conference was held on December 18. We are ready to award the construction contract, pending bid analysis and AFE approval.

Electrical services to the Fire Assay building were completed and heating equipment is currently being installed. The exhaust system is finally on order, but we do not have an estimated completion date.



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ELC:pm

cc: R.W.Bartlett
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